CLAIM AMENDMENTS

Please amend the claims as described below. In accordance with 37 CFR §1.121, a complete listing of all claims in the application is provided below. The status of each claim is indicated in the parenthetical expression adjacent to the corresponding claim number.

1. (**Currently Amended**) An analyte sensing device for sensing a concentration of analyte in a fluid, the analyte sensing device comprising:

a housing; and

an analyte sensing component disposed within the housing and including:

a first radiation converting component to convert radiation of a first wavelength to radiation having at least one different wavelength by receiving radiation of the first wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the first wavelength, wherein an efficiency of conversion by the first radiation converting component to radiation having at least one wavelength that is different from the first wavelength is dependent on the concentration of the analyte in the housing;

a second radiation converting component to convert radiation of a second wavelength to radiation having at least one wavelength that is different from the second wavelength by receiving radiation of the second wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the second wavelength, wherein an efficiency of conversion of the radiation of the second wavelength by the second radiation converting component is independent or substantially independent of the concentration of the analyte in the housing;

a plurality of beads or particles, wherein the second radiation converting component is embedded in or attached to at least one of the plurality of beads or particles;

an analyte-specific binding ligand; and

a macroporous matrix wherein (i) the analyte-specific binding ligand is attached to the ~~surface of, or embedded in the~~ macroporous matrix, and (ii) the plurality of beads or particles is embedded in the macroporous matrix.

2. (**Previously Presented**) The analyte sensing device of claim 1 wherein the housing includes a semi-permeable membrane.

3. (**Previously Presented**) The analyte sensing device of claim 2 wherein the membrane is comprised of a cellulose acetate material.

4. (**Previously Presented**) The analyte sensing device of claim 1 wherein the housing includes at least a permeable portion.

5. (**Previously Presented**) The analyte sensing device of claim 4 wherein the permeable portion of the housing is comprised of a cellulose acetate material.

6. (**Previously Presented**) The analyte sensing device of claim 4 wherein the housing includes a hollow dialysis fiber.

7. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte-specific binding ligand is a lectin.

8. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte sensing component further includes a radiation absorbing component having a proximity to the analyte-specific binding ligand that is sufficient to alter the efficiency of the conversion of the radiation of the first wavelength by the first radiation converting component.

9. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte is glucose and wherein the macroporous matrix includes agarose beads and the analyte-specific binding ligand includes a lectin.

10. (**Previously Presented**) The analyte sensing device of claim 9 wherein the lectin is Concanavalin A.

11. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte-specific binding ligand is covalently labeled with or includes a proximity to a radiation absorbing component.

12. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte sensing component further comprises an analyte-analogue capable of being bound by the analyte-specific binding ligand.

13. (**Previously Presented**) The analyte sensing device of claim 1 wherein the analyte sensing component further includes a third radiation converting component to convert radiation of a third wavelength to at least one wavelength that is different from the third wavelength, wherein an efficiency of conversion of the radiation of the third wavelength by the third radiation converting component is dependent on the concentration of the analyte in the housing.

14. (**Previously Presented**) The analyte sensing device of claim 1 wherein the first and second wavelengths are the same wavelength.

15. (**Previously Presented**) The analyte sensing device of claim 1 wherein the device is capable of being implanted within subcutaneous tissue of an animal body.

16. (**Currently Amended**) The analyte sensing device of claim 1 wherein the analyte sensing component further comprises:

an analyte-analogue;

~~;and~~

wherein the first radiation converting component is attached to the analyte-analogue and the analyte-specific binding ligand is capable of binding to the analyte and/or analyte-analogue; and

a radiation absorbing component having a proximity to the analyte-specific binding ligand that is sufficient to alter the efficiency of the conversion of the radiation of the first

wavelength by the first radiation converting component when the analyte analogue is bound by the analyte-specific binding ligand.

17. (**Previously Presented**) The analyte sensing device of claim 16 wherein the housing comprises a permeable or semi-permeable membrane which allows analyte to move into or out of the housing but does not allow analyte sensing component to move out of the housing.

18. (**Previously Presented**) The analyte sensing device of claim 16 wherein the efficiency of conversion of radiation at the first wavelength to radiation having the at least one different wavelength by the first radiation converting component decreases when the analyte-analogue is bound by the analyte-specific binding ligand.

19. (**Previously Presented**) The analyte sensing device of claim 16 wherein the analyte-analogue is a dextran.

20. (**Previously Presented**) The analyte sensing device of claim 16 wherein the analyte-analogue is a glycosylated or mannosylated protein.

21. (**Previously Presented**) The analyte sensing device of claim 18 wherein the analyte-analogue includes a polymeric chain of glucose residues .

22. (**Previously Presented**) The analyte sensing device of claim 16 wherein the first radiation converting component is Alexa647.

23. (**Previously Presented**) The analyte sensing device of claim 16 wherein the analyte-specific binding ligand is a lectin.

24. (**Previously Presented**) The analyte sensing device of claim 23 wherein the lectin is Concanavalin A.

25. (**Previously Presented**) The analyte sensing device of claim 23 wherein the lectin is *Lens culinaris* lectin.

26. (**Previously Presented**) The analyte sensing device of claim 16 wherein the radiation absorbing component is QSY21.

27. (**Previously Presented**) The analyte sensing device of claim 16 wherein the radiation absorbing component is covalently bound to the analyte-specific binding ligand.

28. (**Currently Amended**) The analyte sensing device of claim 16 wherein the radiation absorbing component is attached to ~~the surface of or embedded throughout~~ the macroporous matrix.

29. (**Previously Presented**) The analyte sensing device of claim 16 further including a third radiation converting component to convert radiation of a third wavelength into radiation having at least one wavelength that is different from the third wavelength by receiving radiation of the third wavelength and, in response thereto, emitting radiation having the at least one wavelength that is different than the third wavelength.

30. (**Previously Presented**) The analyte sensing device of claim 1 wherein the second radiation converting component is LD800.

31. (**Previously Presented**) The analyte sensing device of claim 16 wherein the analyte is glucose.

Claims 32-70 (**Canceled**).

71. (**Currently Amended**) An analyte sensing system for sensing a concentration of analyte in a fluid, the analyte sensing system comprising:

an analyte sensing device including:

a housing; and

an analyte sensing component disposed within the housing and including:

a first radiation converting component to convert radiation of a first wavelength to radiation having at least one different wavelength by receiving radiation of the first wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the first wavelength,

wherein an efficiency of conversion by the first radiation converting component to radiation having at least one wavelength that is different from the first wavelength is dependent on the concentration of the analyte in the housing;

a second radiation converting component to convert radiation of a second wavelength to radiation having at least one wavelength that is different from the second wavelength by receiving radiation of the second wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the second wavelength, wherein an efficiency of conversion of the radiation of the second wavelength by the second radiation converting component is independent or substantially independent of the concentration of the analyte in the housing;

a plurality of beads or particles, wherein the second radiation converting component is embedded in or attached to at least one of the plurality of beads or particles;

an analyte-specific binding ligand; and

a macroporous matrix wherein (i) the analyte-specific binding ligand is attached to the ~~surface of, or embedded in~~ the macroporous matrix, and (ii) the plurality of beads or particles is embedded in the macroporous matrix;

a radiation providing unit to provide radiation at the first wavelength; and

a radiation detecting unit to detect radiation having one or more wavelengths and to output data which is representative of the intensity of the radiation emitted by the first and second radiation converting components.

72. (**Previously Presented**) The analyte sensing system of claim 71 further including an analysis unit to determine the concentration of analyte in the housing using the data which is representative of the intensity of the radiation emitted by the first and second radiation converting components.

73. (**Previously Presented**) The analyte sensing system of claim 71 wherein the radiation detecting unit includes a plurality of radiation detecting devices wherein each device is capable of detecting a wavelength-specific portion of radiation.

74. (**Previously Presented**) The analyte sensing system of claim 71 wherein:

the first radiation converting component converts radiation of the first wavelength to radiation having a plurality of wavelengths by receiving radiation of the first wavelength and, in response thereto, emitting radiation having the plurality of wavelengths, wherein an efficiency of conversion to the radiation having the plurality of wavelengths is dependent on the concentration of the analyte in the housing; and

the radiation detecting unit includes a plurality of radiation detecting devices to detect at least one of the plurality of wavelengths.

75. (**Previously Presented**) The analyte sensing system of claim 71 wherein:

the first radiation converting component converts radiation of the first wavelength to radiation having a plurality of wavelengths within a first wavelength range by receiving radiation of the first wavelength and, in response thereto, emitting radiation having the plurality of wavelengths within the first wavelength range, wherein an efficiency of

conversion to the radiation having the plurality of wavelengths within the first wavelength range is dependent on the concentration of the analyte in the housing; and

the radiation detecting unit includes a plurality of radiation detecting devices to detect radiation within the first wavelength range.

76. (**Previously Presented**) The analyte sensing system of claim 75 wherein the radiation detecting unit includes one or more photodiode detectors or a CCD array.

77. (**Previously Presented**) The analyte sensing system of claim 71 wherein the radiation providing unit is disposed within or adjacent to the housing.

78. (**Previously Presented**) The analyte sensing system of claim 71 wherein:

the analyte sensing component further includes a third radiation converting component to convert radiation of a third wavelength to at least one different wavelength by receiving the radiation of a third wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the third wavelength, wherein an efficiency of conversion is dependent on the concentration of the analyte in the housing;

the radiation detecting unit outputs data which is representative of an intensity of the radiation emitted by the first, second and third radiation converting components; and

wherein the analyte sensing system further includes an analysis unit, coupled to the radiation detecting unit, to determine the concentration of analyte in the housing using the data output by the radiation detecting unit.

79. (**Previously Presented**) The analyte sensing system of claim 71 wherein the analyte sensing system further includes an analysis unit, coupled to the radiation detecting unit, to determine the concentration of analyte inside the housing using the data output by the radiation detecting unit.

80. (**Currently Amended**) The analyte sensing system of claim 79 wherein:

the first radiation converting component converts radiation of the first wavelength to radiation having a plurality of wavelengths within a first wavelength range by receiving radiation of the first wavelength and, in response thereto, emitting radiation having the plurality of wavelengths within the first wavelength range, wherein an efficiency of conversion to the radiation having the plurality of wavelengths within the first wavelength range is dependent on the concentration of the analyte in the housing;

a second radiation converting component to convert radiation of a second wavelength to radiation having a plurality of wavelengths within a second wavelength range by receiving radiation of the second wavelength and, in response thereto, emitting radiation having the plurality of wavelengths within the second wavelength range, wherein an efficiency of conversion to the radiation having the plurality of wavelengths within the first wavelength range is independent or substantially independent of the concentration of the analyte in the housing; and

the determination of the concentration of the analyte by the analysis unit includes (1) conditioning the data output by the radiation detecting unit and (2) computing the ratio of the intensity of the radiation in a first wavelength range corresponding to radiation emitted by the first radiation converting component and a second wavelength range corresponding to radiation emitted by the second radiation converting component.

Claims 81-101 (**Canceled**).

102. (**Currently Amended**) An analyte sensing device for sensing a concentration of analyte in a fluid, the analyte sensing device comprising:

a housing;

an analyte-analogue disposed within the housing;

a macroporous matrix disposed within the housing;

a plurality of beads or particles disposed or embedded in the macroporous matrix;

an analyte-specific binding ligand, (i) attached to the ~~surface of the~~ macroporous matrix ~~or (ii) disposed or embedded in the macroporous matrix~~, and capable of binding to analyte and/or analyte-analogue;

a first radiation converting component, attached to the analyte-analogue, to convert radiation of a first wavelength to radiation having at least one different wavelength by receiving radiation of the first wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the first wavelength, wherein an efficiency of conversion by first radiation converting component to radiation having at least one wavelength that is different from the first wavelength is dependent on the concentration of analyte in the housing;

a second radiation converting component to convert radiation of a second wavelength to radiation having at least one wavelength that is different from the second wavelength by receiving radiation of the second wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the second wavelength, wherein an efficiency of conversion of the radiation of the second wavelength

by the second radiation converting component is independent or substantially independent of the concentration of the analyte in the housing, wherein the second radiation converting component is embedded in or attached to at least one of the plurality of beads or particles; and

a radiation absorbing component, disposed within the housing, having a proximity to the analyte-specific binding ligand that is sufficient to alter the efficiency of the conversion of the radiation of the first wavelength by the first radiation converting component.

103. (**Previously Presented**) The analyte sensing device of claim 102 wherein the housing comprises a permeable or semi-permeable membrane which allows analyte to move into or out of the housing but does not allow analyte sensing component to move out of the housing.

104. (**Previously Presented**) The analyte sensing device of claim 102 wherein the efficiency of conversion of radiation at the first wavelength to radiation having the at least one different wavelength by the first radiation converting component decreases when the analyte-analogue is bound by the analyte-specific binding ligand.

105. (**Previously Presented**) The analyte sensing device of claim 104 wherein the analyte-analogue includes a polymeric chain of glucose residues.

106. (**Previously Presented**) The analyte sensing device of claim 102 wherein the analyte-analogue is a dextran.

107. (**Previously Presented**) The analyte sensing device of claim 102 wherein the analyte-analogue is a glycosylated or mannosylated protein.

108. (**Previously Presented**) The analyte sensing device of claim 102 wherein the first radiation converting component is Alexa647.

109. (**Previously Presented**) The analyte sensing device of claim 102 wherein the analyte-specific binding ligand is a lectin.

110. (**Previously Presented**) The analyte sensing device of claim 109 wherein the lectin is Concanavalin A.

111. (**Previously Presented**) The analyte sensing device of claim 109 wherein the lectin is *Lens culinaris* lectin.

112. (**Previously Presented**) The analyte sensing device of claim 102 wherein the radiation absorbing component is QSY21.

113. (**Previously Presented**) The analyte sensing device of claim 102 wherein the radiation absorbing component is covalently bound to the analyte-specific binding ligand.

114. (**Currently Amended**) The analyte sensing device of claim 102 wherein the radiation absorbing component is attached to ~~the surface of or embedded throughout~~ the macroporous matrix.

115. (**Previously Presented**) The analyte sensing device of claim 102 further including a third radiation converting component to convert radiation of a third wavelength into radiation having at least one wavelength that is different from the third wavelength by receiving radiation of the third wavelength and, in response thereto, emitting radiation having at least one wavelength that is different from the third wavelength.

116. (**Previously Presented**) The analyte sensing device of claim 102 wherein the second radiation converting component is LD800.

117. (**Previously Presented**) The analyte sensing device of claim 102 wherein the analyte is glucose.

118. (**Previously Presented**) The analyte sensing device of claim 102 wherein the second radiation converting component is a TransFluoSpheres.

119. (**Previously Presented**) The analyte sensing device of claim 102 wherein the first and second wavelengths are the same wavelength.

120. (**Previously Presented**) The analyte sensing device of claim 1 wherein the second radiation converting component is a TransFluoSpheres.

121. (**Previously Presented**) The analyte sensing system of claim 71 wherein the second radiation converting component is LD800.

122. (**Previously Presented**) The analyte sensing system of claim 71 wherein the second radiation converting component is a TransFluoSpheres.

123. (**Previously Presented**) The analyte sensing system of claim 71 wherein the first and second wavelengths are the same wavelength.